IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Claude Couture, *et al.*
Serial No.	: 10/044,846
Filed	: 11/09/2001
Group Art Unit	: 1711
Examiner	: Tran, Thao T.
Title	: CROSSLINKED POLYSACCHARIDE, OBTAINED BY CROSSLINKING WITH SUBSTITUTED POLYETHYLENE GLYCOL, AS SUPERABSORBENT
Confirmation No.	: 7917
Last Office Action	: July 15, 2005
Attorney Docket No.	: CLWZ 2 00148

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sirs:

In response to the Advisory Action mailed on July 15, 2005, in connection with the above-identified patent application, Applicants request review of the final rejection. No amendments are being filed with this request.

THE ADVISORY ACTION

In the Advisory Action dated July 15, 2005, the Examiner continued to reject claims 4-9 and 66-82 as being anticipated by U.S. Pat. No. 5,550,189 to Qin et al. ("Qin") under 35 § U.S.C. 102(b). The Examiner is of the opinion that *"since Qin also discloses the same polysaccharide, i.e. carboxymethyl starch, and the same crosslinking agent, i.e. ethylene glycol, as presently claimed, the product of Qin would inherently be the same"*.

REJECTION UNDER 35 U.S.C. § 102

In the Advisory Action mailed on July 15, 2005, the Examiner failed to fully consider the arguments presented by the Applicant in the "RESPONSE/REQUEST FOR RECONSIDERATION" mailed on June 21, 2005. More specifically, on page 3 of the

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Cathryn Terchek

Date: August 17 2005

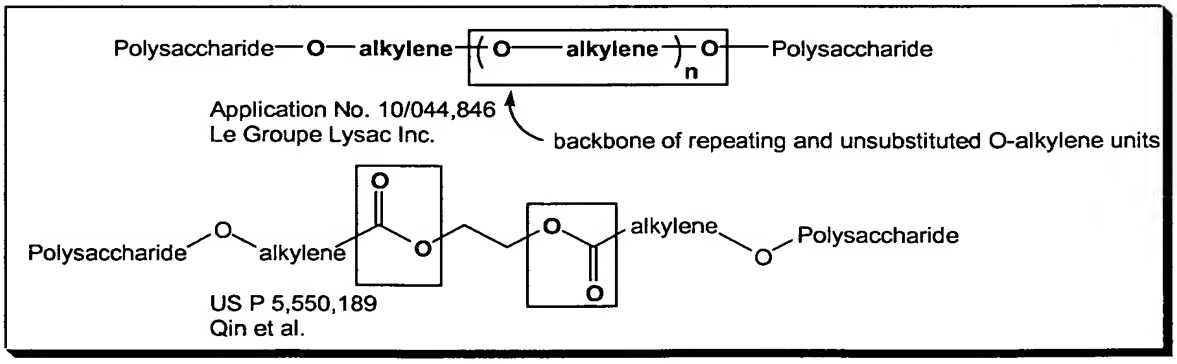
"RESPONSE/REQUEST FOR RECONSIDERATION" it was stated by the Applicant that "*The use of activated polyalkylene glycols to react with hydroxy groups on the polysaccharide results in a crosslinked backbone chain of atoms comprising repeating O-alkylene units, wherein the alkylene moieties are unsubstituted.*"

This argument has been made several times to the Examiner without the Examiner fully appreciating how this differentiates the present claims from Qin. Specifically, a similar argument was previously presented in the telephonic interview on June 17, 2005 in which it was stated that "*Qin teaches an alkylene glycol as a crosslinking agent, whereas the presently claimed invention utilizes a polyethylene glycol*". In addition, this argument was previously presented in the "RESPONSE/REQUEST FOR RECONSIDERATION" mailed March 18, 2005 in which the Applicant submitted that "*Qin et al. is silent about the use of activated polyalkylene glycols as cross-linking agents for polysaccharides. The use of such cross-linking agents results in a polysaccharide which is cross-linked by a backbone chain of atoms comprising repeating O-alkylene units, wherein the alkylene moiety is unsubstituted.*"

In each case, the Examiner failed to consider that the present invention relates to a crosslinked polysaccharide comprising a **Poly**alkylene glycol crosslinking backbone, as opposed to an alkylene glycol crosslinking backbone as disclosed by Qin.

APPLICANT'S ARGUMENTS

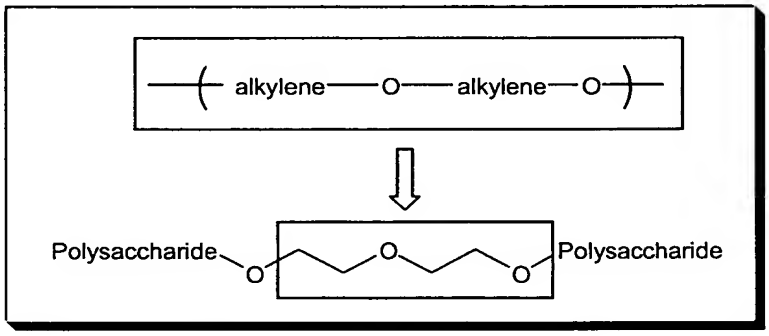
First, in contrast to the teachings of Qin, the crosslinked polysaccharides of the present application are crosslinked by a backbone chain of atoms comprising repeating and unsubstituted O-alkylene units, wherein "n" is an integer ranging from 1 to 100, as shown in Scheme 1.



Scheme 1

In contrast to the teachings by Qin, wherein the polysaccharide is crosslinked by means of a pair of ester linkages, the crosslinked polysaccharides of the present application comprise repeating ether crosslinking units (see Scheme 1 above). The Applicant submits that, in the backbone chain of atoms of the present application, there is ALWAYS a static O-alkylene unit, in addition to a varying number of repeating O-alkylene units. Since "n" is an integer ranging from 1 to 100, the crosslinked

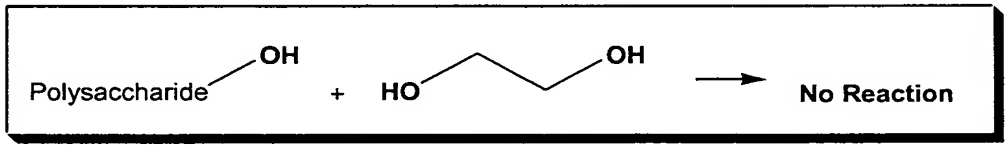
polysaccharides of the present application comprise a crosslinker having at least two repeating O-alkylene units (illustrated below in Scheme 2 using an alkylene group being ethylene and "n" being 1).



Scheme 2

Second, in the Advisory Action mailed on July 15, 2005, the Examiner alleges that *"... the modified polysaccharide having unsubstituted OH groups would form ether linkages with the crosslinking agent"* (the crosslinking agent being ethylene glycol). Moreover, the Examiner alleges that *"since Qin also discloses the same polysaccharide, i.e. carboxymethyl starch, and the same crosslinking agent, i.e. ethylene glycol, as presently claimed, the product of Qin would inherently be the same"*.

The Applicant respectfully submits that even if the degree of substitution in the modified polysaccharides as disclosed by Qin is low, it is well known in the relevant art that the free hydroxyl functions of starch do not readily react with ethylene glycol or with any other polyol. Moreover, the Applicant respectfully submits that it is well established in the relevant art that unactivated OH groups will neither react with one another, nor with ethylene glycol, nor with any other polyol to form ether linkages.



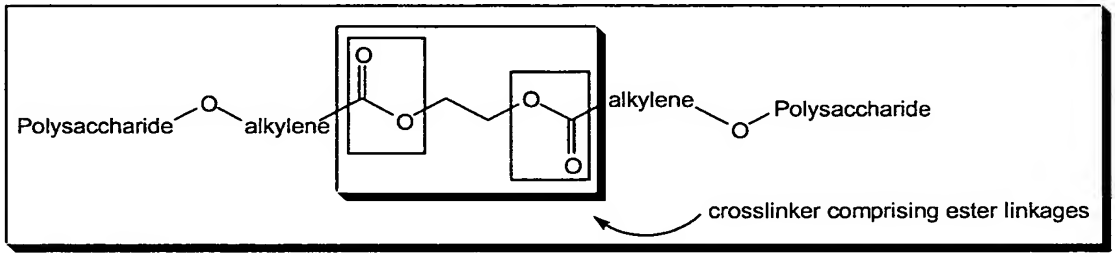
Thus, the applicant respectfully submits that the Examiner's assertion above is incorrect based on an improper understanding of the chemistry involved and that Qin in fact teaches away from the crosslinked backbone chain of atoms as disclosed in the present application.

Third, in the Advisory Action mailed on July 15, 2005, the Examiner alleges that *"... since Qin also discloses the same carboxyalkyl polysaccharide, i.e. carboxymethyl starch, and the same crosslinking agent, i.e. ethylene glycol, as presently claimed, the product of Qin would inherently be the same."* The Applicant submits that contrary to the Examiner's allegation, the present invention does not relate to crosslinked polysaccharides comprising a crosslinking backbone obtained by the use of a crosslinking agent such as ethylene glycol or butylene glycol. The Applicant respectfully

submits that the crosslinking agents described in the present application are activated polyalkylene glycols (see, e.g., paragraph 0038 of the application).

The Applicant respectfully submits that the use of activated polyalkylene glycols as crosslinking agents has NOT been disclosed by Qin. Accordingly, contrary to the Examiner's allegation, none of the crosslinked polysaccharides as claimed in the presently pending application are disclosed by Qin. Moreover, the use of activated polyalkylene glycols as claimed in the presently pending application, inherently results in crosslinked polysaccharides that are structurally significantly different from those of Qin.

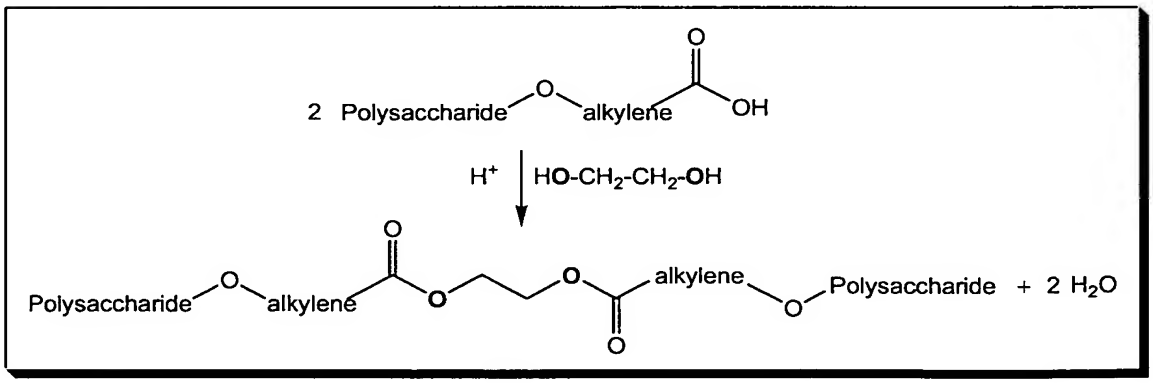
The Applicant submits that crosslinking of the carboxyalkyl polysaccharides as taught by Qin (exemplified by using ethylene glycol as the crosslinking agent), results in a reaction product having the structure as shown below in Scheme 3.



Scheme 3

The crosslinking of carboxyalkyl polysaccharides as taught by Qin *et al.* using a polyol crosslinking agent (exemplified by the use ethylene glycol) inherently results in a polysaccharide which is crosslinked by a backbone chain of atoms comprising ester linkages (Scheme 3).

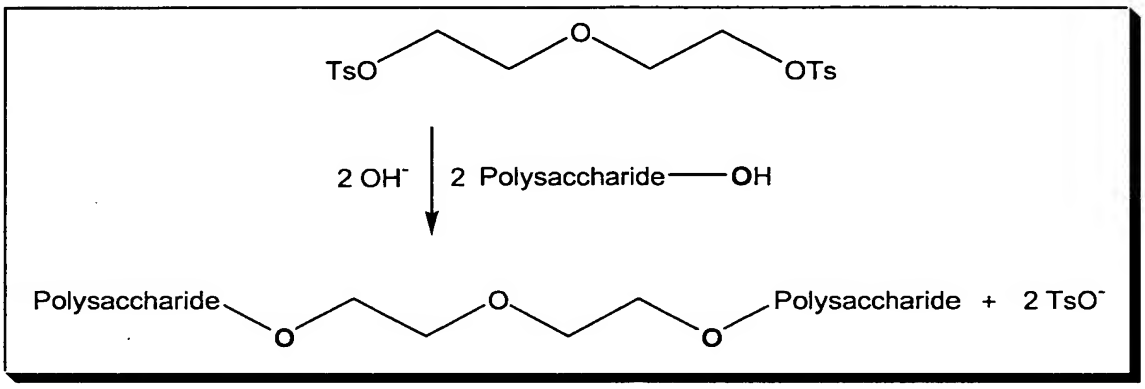
As disclosed by Qin *et al.* such crosslinked carboxyalkyl polysaccharides can typically be obtained by reacting a modified polysaccharide material with a crosslinking agent (exemplified using ethylene glycol) as illustrated below in Scheme 4.



Scheme 4

In contrast to the teachings by Qin and as mentioned above, the crosslinked polysaccharides of the present application are produced using activated polyalkylene glycols as illustrated below in

Scheme 5, which illustrates the reaction process using an activated di-ethylene glycol (n = 1; X = Ts or tosylate). This embodiment is covered by claim 74 as presently pending.



Scheme 5

SUMMARY

Firstly, the Examiner failed to consider an essential argument based on the nature of the backbone chain of atoms crosslinking the polysaccharide. That is, the present invention relates to crosslinked polysaccharides comprising a crosslinker based on a **Poly**alkylene glycol crosslinking backbone, as opposed to an alkylene glycol crosslinking backbone as disclosed by Qin.

Secondly, the Examiner rejected the claims of the present application based on chemically unfounded speculation that ethylene glycol or any other polyol would react with the free hydroxyl (OH) functions of starch, even if the degree of substitution in the modified polysaccharides as disclosed by Qin is low. It is well known in the relevant art that free hydroxyl functions do not readily react with one another, or with ethylene glycol, or with any other unactivated polyol to form ether linkages.

Thirdly, the Applicant submits that contrary to the Examiner's allegation, the present invention does not relate to crosslinked polysaccharides comprising a crosslinking backbone obtained by the use of a crosslinking agent such as ethylene glycol or butylene glycol or any other alkylene glycol. The Applicant respectfully submits that the crosslinking agents described in the present application are activated polyalkylene glycols.

CONCLUSION

For the reasons detailed above, the rejections of the claims are believed to have been overcome. It is respectfully submitted that all claims presently on record in the application (Claims 4-9, 66-82) are patentable over the art of record and are now in condition for allowance. Further a favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

Respectfully submitted,

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Date: Aug 17, 2008

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